

1           1.    A support for an integrated circuit package  
2    extending upwardly from a surface, said support comprising:  
3           a first portion arranged to engage said package  
4    at a point spaced above the location where said package is  
5    electrically connected to said surface; and  
6           a second portion connected to said first  
7    portion and adapted to prevent movement of said package  
8    relative to said surface.

1           2.    The support of claim 1, wherein said package is  
2    engaged by said first portion on the upper end of said  
3    package.

1           3.    The support of claim 1, wherein said first  
2    portion includes a pair of surfaces which engage said  
3    package on two opposed surfaces of said package, sandwiching  
4    said package between said first portion.

1           4.    The support of claim 3, wherein said support is  
2    resiliently biased against the sides of said package.

1           5.    The support of claim 3, wherein said support  
2    contacts the side edges of said package.

1           6.    The support of claim 1, wherein said second  
2    portion is directly connected to said surface.

1           7.    The support of claim 1, wherein support is made  
2    at least in part of a conformal material.

1           8.    The support of claim 1, wherein said support is  
2    made at least in part of plastic foam.

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1           9.    The support of claim 8, wherein said support is  
2   made of plastic foam with at least one slot formed therein,  
3   said slot sized to resiliently engage said package.

1           10.   The support of claim 9, wherein said foam  
2   includes adhesive on its bottom to secure said foam to said  
3   surface.

1           11.   The support of claim 9, wherein said foam is  
2   heat expandable.

1           12.   An integrated circuit package electrically  
2   connectable to a surface comprising:  
3               a first portion arranged to engage said package  
4   at a point spaced above said electrical connection to said  
5   surface; and  
6               a second portion connected to said first  
7   portion, said second portion adapted to prevent movement of  
8   said package relative to said surface.

1           13.   The package of claim 12, wherein said package  
2   is contacted on its upper end.

1           14.   The package of claim 12, wherein said first  
2   portion includes a pair of surfaces which engage said  
3   package on two opposed surfaces of said package, sandwiching  
4   said package between said first portion.

1           15.   The package of claim 14, wherein said first  
2   portion is resiliently biased against the sides of said  
3   package.

1 16. The package of claim 14, wherein said first  
2 portion contacts the side edges of said package.

1 17. The package of claim 12, wherein said second  
2 portion is directly connected to said surface.

1 18. The package of claim 14, wherein said first and  
2 second portions are made at least in part of plastic foam.

1 19. The package of claim 18, wherein said portions  
2 are made of plastic foam with at least one slot formed  
3 therein, said slot sized to resiliently engage said package.

1 20. The package of claim 19, wherein said foam  
2 includes adhesive on its bottom to secure said foam to said  
3 surface.

1 21. The package of claim 14, wherein said first and  
2 second portions are made at least in part of conformal  
3 material.

1 22. A device for preventing relative movement  
2 between a pair of integrated circuit packages with a tall  
3 vertical profile and a surface, said device comprising:

4 a first portion arranged to engage said pair of  
5 said packages at a point spaced away from the location of  
6 the connection between said packages to said surface; and

7 a second portion connected to said first  
8 portion and to said surface.

1 23. The device of claim 22, wherein said packages  
2 are contacted on their upper ends.

1           24. The device of claim 22, wherein said first  
2 portion includes a pair of surfaces which engage said  
3 packages on two opposed surfaces of said packages,  
4 sandwiching each of said packages between said first  
5 portion.

1           25. The device of claim 24, wherein said first  
2 portion is resiliently biased against the sides of said  
3 packages.

1           26. The device of claim 24, wherein said first  
2 portion contacts the side edges of said packages.

1           27. The device of claim 22, wherein said second  
2 portion is directly connected to said surface.

1           28. The device of claim 24, wherein said portions  
2 are made at least in part of conformal material.

1           29. The device of claim 24, wherein said portions  
2 are made at least in part of plastic foam.

1           30. The device of claim 29, wherein said portions  
2 are made of plastic foam with at least one slot formed  
3 therein, said slot sized to resiliently engage said  
4 packages.

1           31. The device of claim 30, wherein said foam  
2 includes adhesive on its bottom to secure said foam to said  
3 surface.

1           32. The device of claim 30, wherein said foam is  
2 heat expanded.

1           33. An electronic device, comprising:  
2           a plurality of integrated circuit packages; and  
3           a surface electrically connected to each of  
4 said packages; and  
5           a support arranged to engage each of said  
6 packages at a point spaced above said surface to prevent  
7 movement of said packages relative to said surface.

1           34. The device of claim 33, wherein each of said  
2 packages is contacted on its upper end.

1           35. The device of claim 33, wherein said first  
2 portion includes a pair of surfaces which engage each of  
3 said packages on two opposed surfaces, sandwiching said  
4 packages.

1           36. The device of claim 35, wherein said support is  
2 resiliently biased against the sides of said packages.

1           37. The device of claim 36, wherein said support  
2 contacts the side edges of said packages.

1           38. The device of claim 33, wherein said support is  
2 made of a heat conducting material.

1           39. The device of claim 38, wherein said material  
2 is a conformal material.

1           40. The device of claim 38, wherein said material  
2 is a foam having heat conductive particles dispersed through  
3 it to increase its heat conductivity.

1           41. The device of claim 37, wherein said support  
2 includes outwardly extending tabs arranged to engage  
3 depressions in said packages.

1           42. The device of claim 33, wherein said support is  
2 directly connected to said surface.

1           43. The device of claim 35, wherein said support is  
2 made at least in part of plastic foam.

1           44. The device of claim 43, wherein said support is  
2 made of plastic foam with a plurality of one slots formed  
3 therein, each slot sized to resiliently engage one of said  
4 modules.

1           45. The device of claim 44, wherein said foam  
2 includes adhesive on its bottom to secure said foam to said  
3 surface.

1           46. A computer system, comprising:  
2           a printed circuit board;  
3           an integrated circuit device connected to and  
4 extending away from said board; and  
5           a device arranged to engage said device at a  
6 point spaced from said connection to said board to prevent  
7 relative movement between said board and said device.

1           47. A method for preventing relative movement  
2 between a surface and an integrated circuit package  
3 connected to said surface, comprising:  
4           engaging said package at a point spaced away  
5 from the location where said package is connected to said  
6 surface; and

7       bracing said package to said surface to prevent  
8 movement of said module relative to the surface at the point  
9 of engagement of said package.

1           48. The method of claim 47, including the step of  
2 engaging a plurality of packages, said packages having  
3 opposed side surfaces and an upper edge, side edges, and a  
4 bottom edge, said bottom edge connected to said surface,  
5 said method including the step of engaging the side surfaces  
6 of said packages.

1           49. The method of claim 47, including the step of  
2 engaging the top edges of said packages.

1           50. The method of claim 48, including the step of  
2 resiliently engaging said packages.

1           51. The method of claim 47, including the step of  
2 simultaneously engaging a plurality of adjacently positioned  
3 packages and bracing said packages against said surface and  
4 against each other.

1           52. The method of claim 47, including the step of  
2 telescopically sliding a foam portion over said package into  
3 engagement with said surface.

1           53. A method for stabilizing integrated circuit  
2 packages mounted on a surface, comprising:  
3               inserting a member between two adjacent  
4 packages; and  
5               bracing said packages against movement relative  
6 to said surface.

1           54. The method of claim 53, including the step of  
2 bracing said packages against one another.

1           55. The method of claim 54, including the step of  
2 bracing said packages directly against said surface.

1           56. The method of claim 53, including the step of  
2 sliding a foam portion downwardly between two adjacent  
3 packages and resiliently biasing said foam against said  
4 packages.

1           57. The method of claim 53, wherein said member  
2 does not contact said surface.

1           58. A method for stabilizing integrated circuit  
2 packages secured to a surface, comprising:  
3               sliding an engaging framework over said  
4 packages; and  
5               securing said framework to a structure other  
6 than said packages.

1           59. The method of claim 58, including the step of  
2 also securing said framework to said packages.

1           60. The method of claim 58, including the step of  
2 resiliently engaging said packages.

1           61. The method of claim 58, including the step of  
2 clamping said packages to said surface.



1           62. A method for stabilizing integrated circuit  
2 packages secured to a surface, comprising:  
3           arranging a support about a package; and  
4           causing said support to expand into engagement  
5 with said package.

1           63. The method of claim 62, including heat  
2 expanding said support.

1           64. The method of claim 62, including securing said  
2 support to said surface.

1           65. A support for an integrated package connectable  
2 to a surface, comprising:  
3           a member adapted to be positioned about said  
4 package, said member being expandable in response to heat  
5 into engagement with said package; and  
6           a connection between said member and said  
7 surface.

1           66. The support of claim 65, wherein said member is  
2 made of foam, said member having an opening to receive said  
3 package.

1           67. The support of claim 65, wherein said member  
2 includes a plurality of openings to receive a plurality of  
3 packages.